

Microstructural variations of a pyrope inclusion in diamond, as revealed by a micro-Raman spectroscopic study

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Using a micro-Raman technique, two microstructural variations of a syngenetic pyrope inclusion in diamond from Liaoning, China, have been recognized, the degeneration of long-range order and the existence of a structural hydrous component. These experimental results provide direct evidence for the existence of a crystalline-amorphous transition, the incorporation of “mantle water” into the structure of a magnesium silicate, and the genetic correlation of these two phenomena in the specific range of conditions in the upper mantle in which diamond forms.